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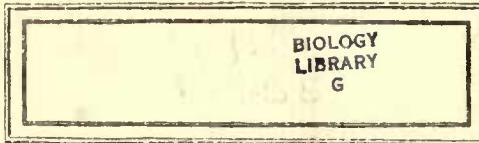
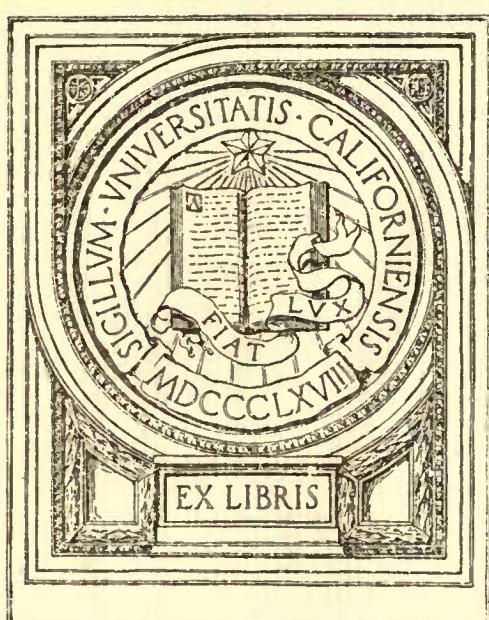
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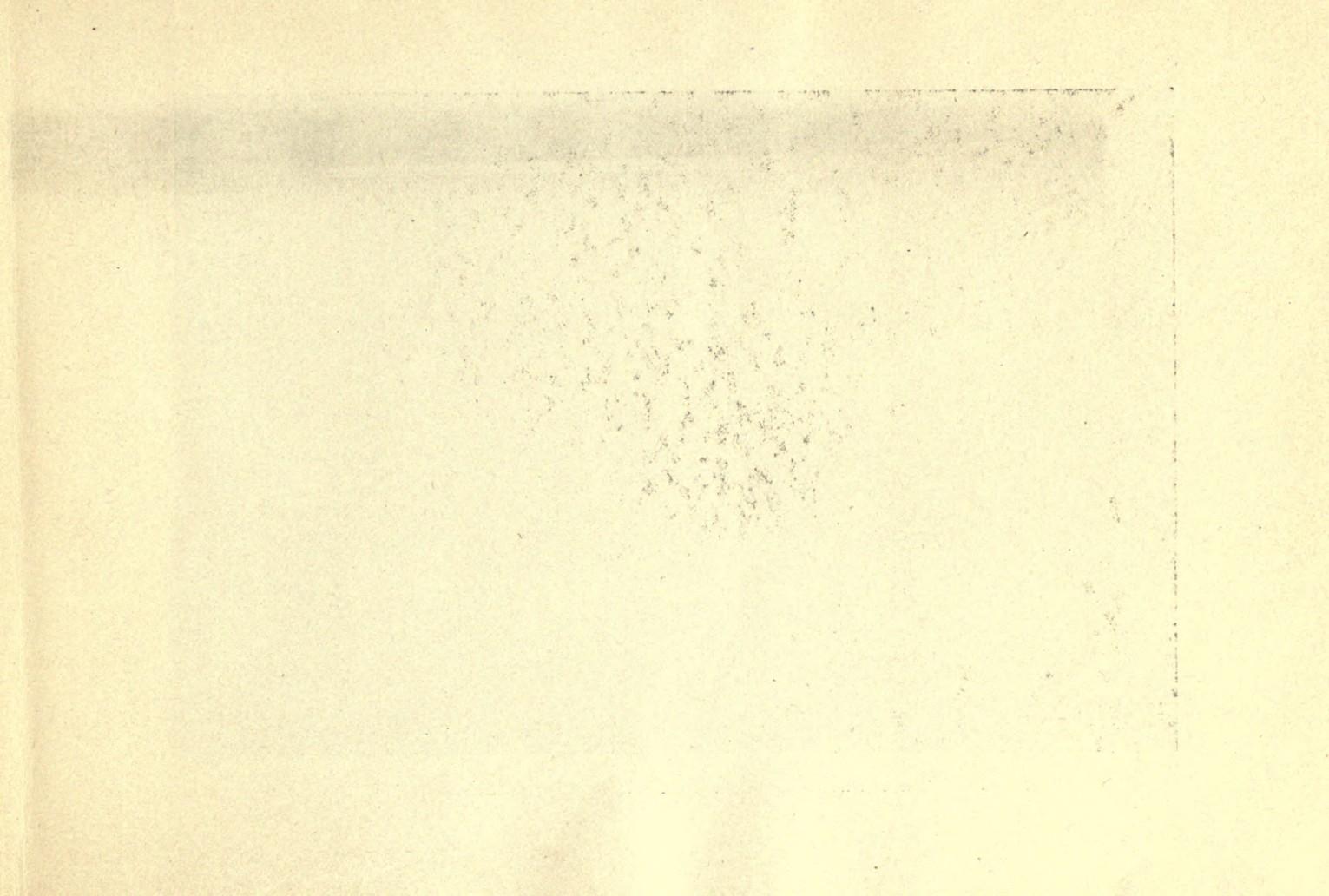


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BOY BIRD HOUSE ARCHITECTURE







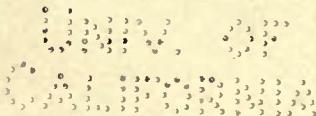


Exhibition of Birdhouses in the Fairbanks Museum, St. Johnsbury, Vt.

BOY BIRD HOUSE ARCHITECTURE

By LEON H. BAXTER

Director of Manual Training, Public Schools
St. Johnsbury, Vt.



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TO MARY
AMERICAN
CULTURE

INTRODUCTORY NOTE

It is with much pleasure that I commend to the public this little book regarding the construction of Bird Houses. As Instructor in Nature Study at the Fairbanks Museum it has been my privilege and pleasure to co-operate closely with Mr. Baxter's work in the manual training department of the local schools. Through his instruction our boys are proud to be considered natural guardians of bird homes in our town, which is veritably a bird sanctuary. About two hundred suitable nesting boxes have been placed in proper localities during the past three years.

The Museum offers prizes each year to the boys of Mr. Baxter's classes and our exhibit of Bird Houses on the first Saturday in April is an event that attracts many proud parents to inspect the work of their children.

In this little book, Mr. Baxter tells very explicitly just how any one can build suitable houses to attract our native birds.

Just here I would like to say that any town or community that protects its birds, insures its harvests against destruction by insect pests. Therefore the economic value of Bird Houses is even greater than the aesthetic. The results actually accomplished by Mr. Baxter along these lines vouch for the accuracy of the information contained in this little book.

INEZ ADDIE HOWE,

Instructor in Nature Study.

The Fairbanks Museum,
St. Johnsbury, Vt.

AUTHOR'S PREFACE

To the lover of the open, the woods, the fields, and waterways and all of God's wild things, this book is affectionately dedicated.

To lead the boy and girl toward their proper relationship with their feathered friends of the air, and to instil the feeling of protection toward our native birds, these pages have been written and these designs made.

What is offered between the covers of this little book is the results of study and observation of birds and their ways covering a period of six years.

Each drawing offered is of a proven house, one that has served as a home for some of our songsters and if the directions, here set down,

are faithfully followed, equal success will crown the builders' efforts.

While the greater part of the text is the result of knowledge which the writer has gleaned at first hand, yet the author has several times quoted from the text of the Farmers' Bulletin No. 621, United States Department of Agriculture, and from a contribution by Edward Howe Forbush, in Bulletin No. 1, published by The National Association of Audubon Societies. Fig. 2, the photograph showing a blue bird entering a box, is by S. P. Brownell, East Barnet, Vt.

LEON H. BAXTER.

St. Johnsbury, Vt.
Feb. 2, 1920.

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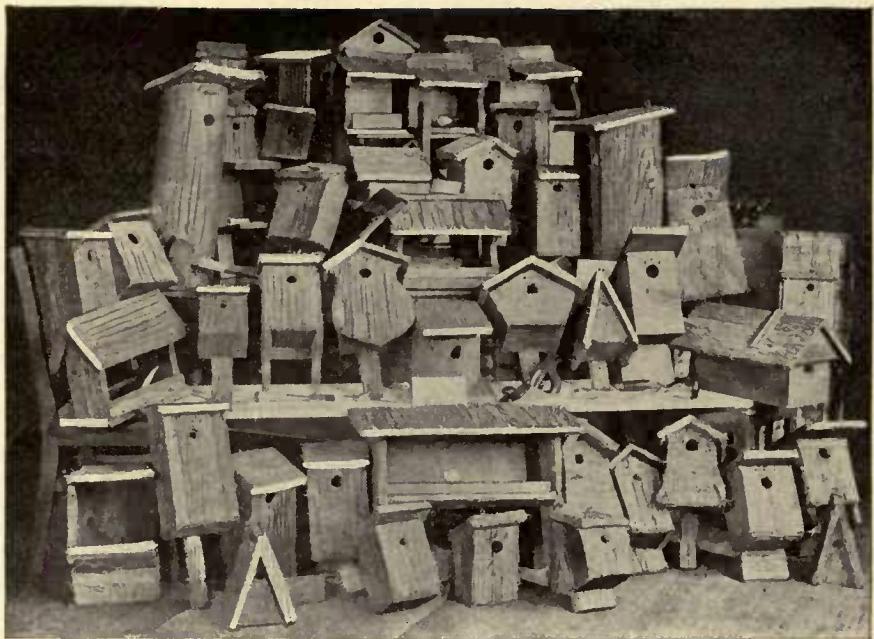


Fig. 5. Exhibit of Birdhouses Made in the St. Johnsbury Schools in 1919.



OUR FRIENDS THE BIRDS

IT has been positively proven that birds will return annually in greater numbers to localities where assistance, in the form of nesting boxes, has been rendered by those interested in bird welfare, than to those places where no such provision has been made.

A progressive study of our native birds by competent individuals, especially through the United States Department of Agriculture in its Farmers' Bulletins, has shown very decisively that the return made by our feathered friends by ridding our gardens and orchards of destructive worms and insects, is many times as valuable as the small commission they collect by sampling a berry or two here and there.

Innumerable quantities of seeds of plants and weeds which would otherwise overrun our gardens are eaten by the birds. This, together

with the fact that these same birds with their brilliant plumage and beautiful songs, are a valuable asset to our neighborhood, ought certainly to impress us that they are deserving of our assistance and protection. Assistance is best afforded by preparing suitable houses and feeding shelves for them, and also by placing bits of string, horsehair, and other nesting material convenient for them. Protection is simple and may be limited to laws safeguarding birds from harm, to killing off as many as possible of the English sparrows, and to seeing that cats are not allowed any undue opportunity for harming them.

The boy or girl who puts up boxes for the birds to nest in, supplies them with drinking and bathing places, and provides food for those species which remain in winter, is certain of an unfailing source of pleasure, which can



Fig. 1. Blue Blrd Feeding Young.

never be known to any one who pursues them with airgun and stones, or simply ignores their presence. The chances are that the bird-loving boy or girl will make the better citizen.

BIRDS THAT ADAPT THEMSELVES TO NESTING BOXES.

There is quite a large number of birds that easily adapt themselves to the artificially made house. The main thing is to consider the type of house that will appeal to the intended tenants, one that approaches nearest to their natural desires and nesting sites.

Bluebirds and house wrens are the easiest to entice to the nesting box. Plain weather stained boxes or those covered with bark have proven to be the best type.

Purple martins nest in colonies but are scarce now in contrast to their former numbers. Tree swallows take to the boxes, but if an occasion arises where they have a choice between the box and a natural cavity, generally the latter will be selected.

Chickadees and flickers take to the home-made box and, sometimes the little screech owl occupies one of the man-made residences.

He makes a worthy tenant, for as a mouser, he is superior to the house cat.

Robin Red Breast is another easily attracted native bird. Last year I put up a robin shelf, similar to the ones shown in the following drawings, and inside of fifteen minutes Mr. and Mrs. Robin had hired the apartment for the season and were soon busily engaged in weaving the nest within fifteen feet of where we were observing them.

THE BLUEBIRDS.

The eastern bluebird is a common inhabitant of all States east of the Rocky Mountains from the Gulf of Mexico to Southern Canada.

In the Mississippi Valley it winters as far



Fig. 2. Blue Bird Entering Box.

north as Southern Illinois, and in the East as far as Pennsylvania. It is one of the earliest northern migrants and everywhere is hailed as a harbinger of spring.



Fig. 3. Chickadee Feeding.

Domestic in habits, it frequents orchards and gardens and builds close to human habitations.

Fig. 1 shows a bluebird at the entrance to an artificially hollowed tree trunk, feeding its

young. Fig. 2 shows another bluebird about to enter a bird box.

THE ROBIN.

To many the robin is the most cherished of birds and is found throughout the States east of the Great Plains, and is represented farther west and south by slightly different sub-species. It breeds far north through Canada, and is found even in Alaska. It is quite fearless and will occupy a bird shelf close to human habitation. The robin, however, refuses the enclosed house and therefore the front and one side should be made open.

THE TITMICE.

These birds, although insignificant in size, have enormous appetites and feed chiefly on small insects and their eggs that wholly escape

the search of larger birds. This bird, or some of its sub-species, occupies the whole of the United States north of the latitude of Washington and extends into Canada.

In the eastern portion of the country the best known and most widely distributed species is the common black capped chickadee. Fig. 3 shows a chickadee feeding from the hand.

THE WRENS.

The diminutive house wren frequents barns and gardens and particularly old orchards in which the trees are partially decayed. He makes his nest in a hollow where perhaps a woodpecker had a domicile the year before, but he is a pugnacious character, and if he happens to fancy one of the boxes put up for bluebirds, he does not hesitate to take it. He is usually not slow to avail himself of boxes,



Fig. 4.

gourds, tin cans, or empty jars placed for his accommodation.

The various species of wrens occupy more or less the whole country from the Atlantic to the Pacific. The wren is one of our most

friendly birds and his presence should be encouraged about every farm, village, and suburban residence.

THE WOODPECKER.

The woodpeckers are the true bird carpenters and do a great amount of good in destroying harmful insects and boring worms.

These birds are found most everywhere in the United States, several species remaining in the northern States throughout the year.

Two of the best known woodpeckers, the hairy woodpecker and the downy woodpecker, range over a greater part of the United States.

One of the larger woodpeckers familiar to us all is the flicker, or golden winged woodpecker.

Most all of the woodpeckers will adopt the

artificial house, especially those hollowed out of a split piece of limb.

BIRD HOUSE MATERIAL.

Great varieties of houses can be constructed of half inch lumber and can be made very attractive to the eye. Other material, however, can be utilized.

The most natural Bird Homes, and such as may often be provided with the least trouble, are pieces of hollow limbs or small hollow trunks of trees, or the old nesting holes of woodpeckers. If no limbs with suitable cavities are found, they may be made by taking a piece of a limb, about eight inches in diameter and fourteen to sixteen inches long, dividing it in half, with a rip saw, from one end to within three inches of the other, where the cut is met by a right-angle cut from the side,

After this an entrance hole of the required size is made through the shorter or front half.

The two halves are hollowed out, as shown in Plate 19, so as to form a cylindrical cavity about three and one-half inches in diameter and ten inches deep; then the two halves are placed together and held with screws or bolts.

A similar Bird Home is made by boring an auger hole from one end of a piece of limb to within a couple inches of the other, plugging the bored end, and making an entrance hole near the other end. These homes are adapted to woodpeckers, bluebirds, house wrens, chickadees and tree swallows. A little larger home of the same type is required for crested fly catchers and decidedly larger ones for the flicker.

A good sized, deserted flickers' home or

similar cavity provides a nesting place attractive to the screech owl.

A piece of wooden tubing from a chain-pump, with the ends plugged, and an entrance made in the side near the upper end, the tube being covered with bark, makes a very good substitute for a hollow limb.

If old and weather stained boards are used in making the box houses, bark covering is not absolutely necessary, but it adds to the attractiveness, from both the birds' and the human standpoint, and bark affords a good foothold for the birds as they alight at the entrance. Woodpeckers especially should have bark covered exteriors to their homes.

Dried gourds, hollowed out, and with an opening made for an entrance, often attract wrens and bluebirds.

While tin cans may be used, it is not desirable, in the author's opinion to make use of this medium as tin becomes very hot in the sun. If cans are used, care should be taken to place them in shaded places. Flower pots inverted, as illustrated in Plate 19, are suitable for some of the smaller birds.

The old fashioned chimney having been replaced by the modern chimney with small flues, the chimney swifts may be provided with suitable nesting quarters by building on the roofs of barns or sheds, artificial chimneys of wood.

Birds may not always respond promptly to the first attempt at placing a Bird Box, but the would-be landlord must not get discouraged.

Prepare some Bird Homes in as attractive a manner as possible, keep a supply of water

for bathing and drinking at hand, and prevent their being disturbed. Then watch for the results that are almost sure to come.

Persistent and intelligent effort will bring ultimate results, which will be sure to reward the attempt. Experience is the best teacher.

METHODS OF FINISHING EXTERIORS.

As has been before stated, the best finish for the outside of our Bird Houses is bark.

The writer has experimented with various kinds of bark and has obtained the best results with the bark from the cedar.

It is rough enough for the birds to obtain a good foothold upon, it is very artistic in appearance, cuts and bends very easily and can be held with four ounce tacks.

A word should be said here about obtaining

this bark, as it should never be taken from the living tree. Cedar posts are used very much for supports in building and most any contractor or mill man has quantities on hand. These posts most always must have the bark removed, especially the part to show above ground, and the owners, I have found, are glad to have the boys remove the bark from them. Sometimes a fallen cedar will be found in the woods and from it may be obtained all the bark necessary for a number of boxes.

If the whole Bird Box is not to be bark covered it is a good plan to see that the roof is protected by bark.

The remaining portions of the house should be stained or painted a very somber color, such as dull gray, brown, or dark green. Avoid all gloss paints as they reflect light and tend to drive away rather than attract the birds.

Bright colors should also be avoided. A nicely constructed Bird Box painted a brilliant red with yellow trimmings or some other equally absurd combination such as the writer has seen, is a travesty on proper Bird House construction. Gloss paints can be dulled by adding turpentine.

Painted or stained houses should be put out at least a month or more before the time for the birds to arrive. This is to weather them and remove all odors. It is a good plan to put out Bird Boxes in the fall if possible, and they are then in excellent shape for spring use. Do not paint or stain Bird Boxes on the inside.

Place the houses in quiet places, away from the direct rays of the sun, high enough to be out of the way of prowling cats or too inquisitive human beings:

BIRD BOX SPECIFICATIONS.

To successfully entice the birds to a man,—or rather boy—or girl-made home, there are certain rules which experience has proven we must follow.

The drawings in this book have been made as nearly correct as careful study of all available data on the subject will allow. The author feels confident that if the drawings, together with the specifications that go with them, are carefully followed the artisan will be amply rewarded by finding all bird tene-ments "let" as soon as the spring migration and nesting season starts.

These houses and many of varied design have been successfully built by pupils of the seventh and eighth grades, with over 75 percent of success in having them occupied.

The table given below gives the correct dimensions for a variety of houses for different birds.

The size of the opening is very important, as it is essential that it be no larger than is necessary for the bird for whom it is intended, to conveniently enter.

The smaller birds will be bothered a great deal by the English sparrow, who enters if the opening is not kept very small.

It is considered by a majority of authorities that a perch is not a help but a hindrance at the opening. The sparrows alight there and by their incessant chirping drive out or annoy the more desirable occupants. Again, the bluebird and most of the other song birds can fly directly to the edge of the opening and thus go in, while the sparrow, not quite

as clever, must first alight on the perch and get his bearing before hopping in.

It is exceedingly important that there be some means of cleaning out Bird Houses at the season's end or to remove any dead birdlings during the season. This may be taken care of by having either the roof or the bottom hinged.

TYPICAL BIRD HOUSE SPECIFICATIONS.

Bird	Floor Area in Inches	Depth in Inches	Entrance Above Floor in Inches	Diameter of Entrance in Inches	Height From Ground in Inches	Bird	Floor Area in Inches	Depth in Inches	Entrance Above Floor in Inches	Diameter of Entrance in Inches	Height From Ground in Inches
Bluebird	5x5	8	6	1-1/2	5-10	Tufted Tit-	4x4	8-10	8	1-1/4	6-15
Robin	6x8	8	(a)	(a)	6-15	White-breasted	:				
Chickadee ...	4x4	8-10	8	1-1/8	6-15	Nuthatch ..	4x4	8-10	8	1-1/4	12-20
						House Wren..	4x4	6-8	1-6	7/8	6-10
						Bewick Wren.	4x4	6-8	1-6	1-1/8	6-10
						Carolina					
						Wren	4x4	6-8	1-6	1-1/8	6-10
						Dipper	6x6	6	1	3	1-3
						Violent-Green					
						Swallow	5x5	6	1-6	1-1/2	10-15
						Tree Swallow.	5x5	6	1-6	1-1/2	10-15
						Barn Swallow.	6x6	6	(a)	(a)	8-12
						Martin	6x6	6	1	2-1/2	16-20

Bird		Floor Area in Inches	Depth in Inches	Entrance Above Floor in Inches	Diameter of Entrance in Inches	Height From Ground in Inches
Swallow ...	6x6	6	1	2-1/2	16-20	
Song Sparrow ...	6x6	6	(b)	...	1-3	
Crested Flycatcher ..	6x6	8-10	8	2	8-20	
Red-headed Woodpecker.	6x6	12-15	12	2	12-20	
Golden-Fronted Woodpecker.	6x6	12-15	12	1-1/2	12-20	
Hairy Woodpecker.	6x6	12-15	12	1-1/2	12-20	
Downy Woodpecker.	4x4	8-10	8	1-1/4	6-20	
Sereeh Owl...	8x8	12-15	12	3	10-30	

Bird		Floor Area In Inches	Depth In Inches	Entrance Above Floor In Inches	Diameter of Entrance In Inches	Height From Ground In Inches
Sparrow Hawk	8x8	12-15	12	3	10-30	
Saw-Whet Owl	6x6	10-12	10	2-1/2	12-20	
Barn Owl.....	10x18	15-18	4	6	12-18	
Wood Duck...	10x18	10-15	3	6	4-20	

(a) One or more sides open.

(b) All sides open.

Golden-Fronted Woodpecker.	6x6	12-15	12	1-1/2	12-20
Hairy Woodpecker.	6x6	12-15	12	1-1/2	12-20
Downy Woodpecker.	4x4	8-10	8	1-1/4	6-20
Sereeh Owl...	8x8	12-15	12	3	10-30

There should be a few small holes bored in the bottom to allow any moisture that might accumulate, to drain. Also, another set of holes at least $\frac{1}{4}$ -inch in diameter should be bored for ventilation, high enough so that no drafts will affect the young. These are best located just under the eaves.

In boring the entrance hole, tip the bit upward slightly so that rain water will not drip inward.

Some device for attaching the house to a building or tree should be provided. It is best to have the house stationary to prevent undue swinging in a high wind, perhaps causing the breaking of eggs and discomfort to the mother bird.

Houses of unusual shape or design are not considered as good as the plainer types, the idea being to make each house harmonize as naturally as possible with the surroundings.

It must be evident from the foregoing that there are quite a number of things to keep in mind as we prepare our plans for the homes of the future feathered inhabitants.

METHODS OF CONDUCTING A BIRD HOUSE CONTEST.

St. Johnsbury, Vermont, is very fortunate in having a fine Museum of Natural Science with a corps of very efficient workers on its staff.

Every year the directors of the Museum donate a substantial amount of prize money as rewards for the best houses constructed for birds by pupils of the grammar school.

The local Commercial Club, as well as many of the merchants also, add generously to the fund, so that the boys and girls, besides having an incentive for helping their bird friends from an economic standpoint, also have a chance to profit financially.

Previous to starting work the Museum instructors give interesting lectures on the ne-



Fig. 6. A Group of Prize Winners.

cessity of providing all possible assistance for the birds, and by mounted specimens show the various birds that readily accept the artificial houses. They also explain the entrance sizes required by the different species, and go into detail concerning ventilation, drainage, coloring and placing of the houses.

Later on the children are taken on bird walks, so as to study first hand the characteristics, habitat, and difference in coloring of the male and female of the various native birds.

Original designs are encouraged, and with discussions and good advice the work is started. A stated amount of time is allowed for completing the houses, and the material is paid for by each pupil.

On the appointed day the houses are numbered and grouped and are ready for the judging.

Three judges are appointed from among people who are proficient to judge such an exhibit, usually one of the museum instructors, to judge the technical side, a carpenter or mechanic, to judge the workmanship, and one

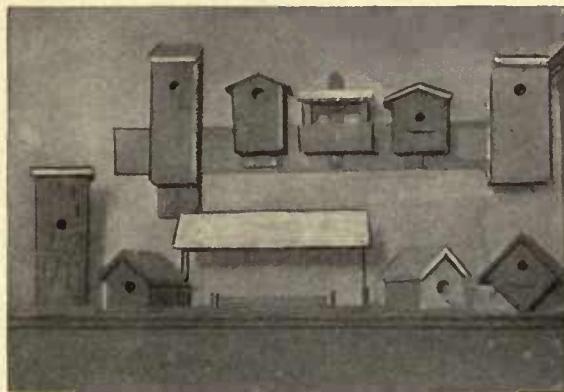


Fig. 7. Results of the First Contest in St. Johnsbury.

who is interested in art to take care of the general design and appearance.

The score card is as follows:

Fitness to purpose.....	50%
Skill in Workmanship.....	30%
Appearance, design, color....	20%
Total	100%

Each judge marks individually on the tally and the box whose score is highest in the estimation of all, receives first and so on through all the prizes.

Sometimes the pupils judge the display beforehand and compare their results with those

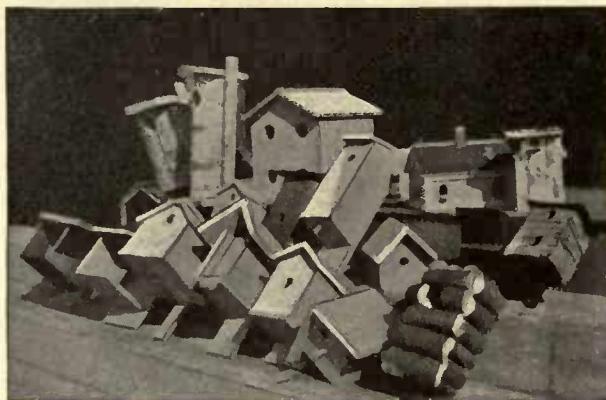


Fig. 8. Some Houses Made in 1916.

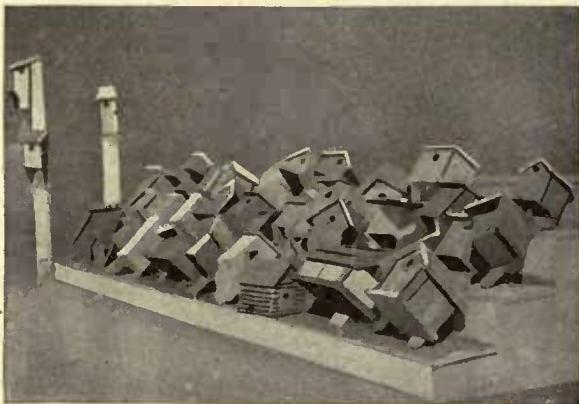


Fig. 9. A Few Houses Made in 1917.

of the selected judges, and it has proven generally that boys and girls will use very excellent judgment in selecting the winners.

The prizes are usually tools, good books, and thrift stamps, and this annual event is

looked forward to with keen anticipation by the youthful designers.

Figs. 4 and 5 show exhibits at the local museum for the past two years.

Fig. 6 shows a group of prize winners.

Figs. 7, 8 and 9 show collections of houses made during the past four years.

Fig. 10 shows one prize winner with his house hollowed from a piece of birch limb.

BIRD HOUSE DAY.

After the prize winners have been announced a day is set for all who are interested, to gather at the Museum, and with nails, hammers, wire and step ladder, together with the Bird Boxes start out to place the houses in position. Fig. 11 shows a group about to start. Fig. 12 gives a view of the boys placing a house in a tree.

BIRD ENEMIES.

Our bird friends have much to contend with in raising their broods, and it is here we can render them valuable assistance.

The cat, the greatest enemy of birds, must be attended to diplomatically.

The shot gun method will not do here or we may find ourselves haled into court upon the complaint of some neighbor.

The best way is to guard the tree trunks with tin as suggested in several ways in Plate 19. For tramp cats, having no home or owner, the trap shown in the same plate will be found efficient.

Spikes may be driven in part way about a pole so that the row of heads prevent the cats getting by.



Fig. 10. A Winner.



Fig. 11. Children Starting Out to Put Up Houses.

English Sparrows are another sworn enemy of our song birds and they should be exterminated in every way possible.

Traps, air guns and any other means, no matter how diabolical, are all too good for this feathered pest. Their nests should be pulled

down and the young destroyed whenever and wherever found. They are persistent and must be continuously harassed.

Squirrels and snakes also steal both the eggs and the young and they should be driven from localities frequented by birds.

GENERAL DIRECTIONS FOR STARTING WORK ON THE BIRD BOXES.

First decide upon the bird for which your house is to be made and, referring to the drawings, select the one which best suits your fancy.

Look the various pieces over and estimate about how much lumber will be required, then plan your work so as to cut your board with as little waste as possible. Take pieces of a similar width and get them out in one long piece from your board.

Plane one edge of the board straight and smooth and call this the working edge, or edge from which all measurements are to be taken. Square one end square with the working edge and the surface. Measure from this square end, the length specified on the drawing, and square a line across the board, placing the try square handle tight against the working edge.

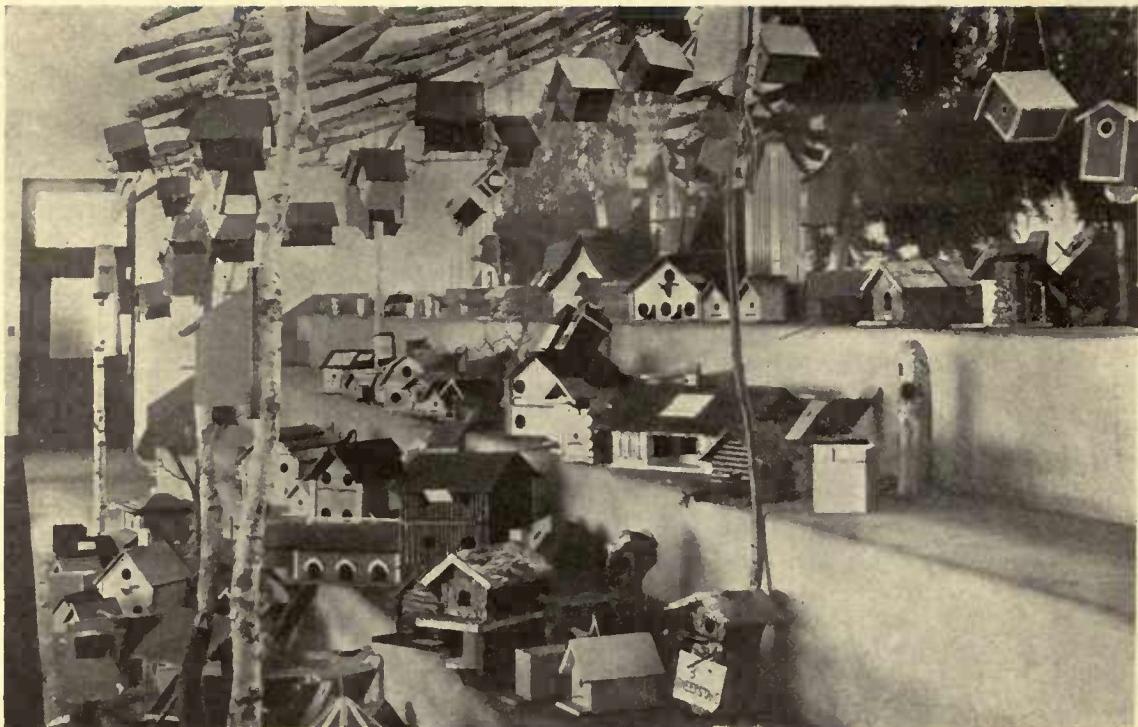
Next take the cross-cut saw and saw carefully just outside your line on the side away from the piece to be cut off. Plane now back to the line and no further. The width must next be obtained either with a marking gage, if you have one, set at the required distance, or by measuring carefully with your ruler.

Now saw and plane to your line. Treat each piece in this manner and mark with its proper letter, to be ready for assembling later.

We shall consider, for illustration, that we



Fig. 12. Putting Up a House.



A School Exhibit of Bird Houses at Crosby-Ironton, Minn.

are making the Blue Bird House shown in Plate 3. We have our pieces all cut out and numbered and shall now cut the shape of pieces A, which are the front and rear of the house, from our pieces that we have previously cut 8- $\frac{1}{2}$ inches wide by 10 inches long.

Find the center of one end, which will be one-half of 8- $\frac{1}{2}$ inches or 4- $\frac{1}{4}$ inches. Measure down on each side 4 inches and draw from our edge center to these points.

Find the center of our bottom edge next and measure 2- $\frac{1}{2}$ inches each side to make our bottom edge 5 inches wide, as shown. Draw from the ends of this 5 inch lines to our points on the sides and we are ready to carefully cut out the form as shown in the drawing. Always remember when sawing to a line to leave about 1/16 inch between our saw cut

and the line and finish with a plane to the line.

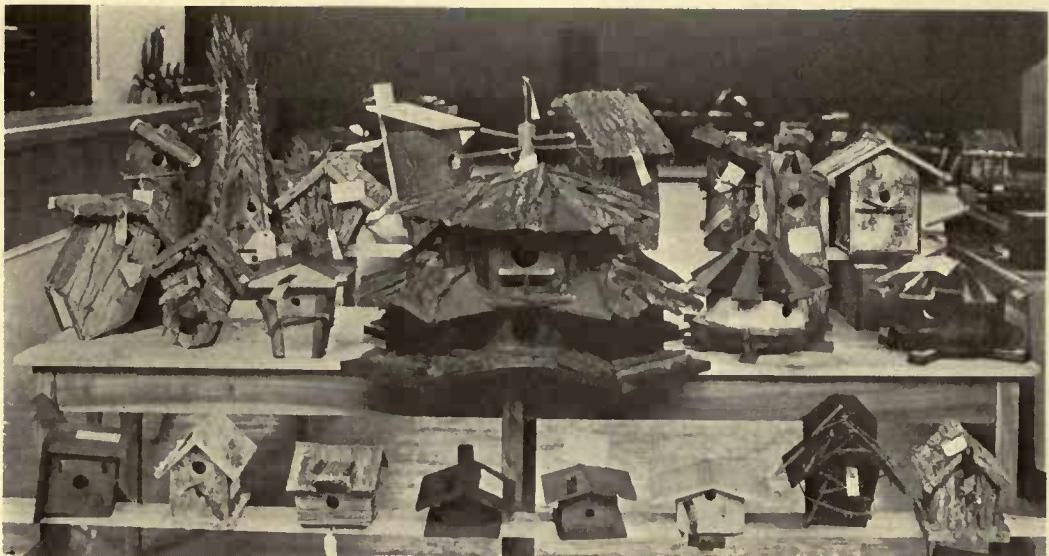
Be sure that the front and rear pieces are exactly the same size and shape to insure our house going together nicely later.

Take the bottom piece E and draw light lines from corner to corner, and with a dot locate the points where we are to bore our drainage holes.

In boring these take care not to split through on the opposite side.

Locate the holes for ventilation next and bore these carefully.

Take our back brace F next and draw a light pencil line from end to end, through the center, and locate the holes for nailing to the tree 1 inch in from either end. The holes for



Some Bird Houses Made in the Schools at Rochester, N. Y.

screwing piece F to the box are 3- $\frac{1}{2}$ inches beyond these outer holes. Bore carefully.

Bore the entrance hole with an expansive bit set so as to bore a hole 1- $\frac{1}{2}$ inch in diameter. The center for this hole is 3 inches down from the top and 4- $\frac{1}{4}$ inches from either side.

If the house is to be painted it should be thoroughly sandpapered with No. $\frac{1}{2}$ sandpaper, going with the grain.

Take the sides and bevel them to fit the front and back pieces, that is plane them so that when they are placed in proper position against the front and rear, the edges will follow the same sweep as the eaves and the bottom edge. All cutting should be finished before sandpapering so as not to dull our plane blade with the fine particles of sand left in the wood by the sandpaper.

Nail the sides to the front and rear, using 1- $\frac{1}{4}$ inch brads, placing about five on each edge, and taking care that they strike fair in the center of the edge to prevent splitting.

Next nail on roof C, having the rear edge flush with the rear of the box allowing all projection to come in front. Have ridge edge just level with peak. Next nail on roof B, seeing that it overlaps and is nailed to the edge of C.

Next attach piece F to the rear of the box with screws, allowing equal projection above and below the box. Take the bottom E and screw on an inch butt hinge to the under side at the middle point of the rear edge. Then place in position and screw the other part of hinge to F, taking care that the bottom fits tightly against the bottom edges of the box.

Retain in front by means of a small flat hook and eye as shown.



Fig. 13. A Food Shelter.

Our box is now ready to be either painted or covered with bark as desired.

If it is to be bark covered use a pair of snip shears to cut the bark to the size re-

quired. It is generally a good plan to cut the bark a little large and trim off after attaching it to the box. Use 4 oz. tacks, using as few as possible. Have the bark run uniformly in the same direction over the box. Bark directly over all holes and when finished cut these out with a sharp knife.

If a house is to be painted and have a bark roof only, paint first and allow to dry, perhaps giving a second coat and then place the bark on the roof.

This same method of construction as described will be practically the same for any of the houses shown.

Lumber should be used that will withstand the weather. Cypress, spruce and soft pine are perhaps the best.

WINTER CARE OF THE BIRDS.

If you wish to attract birds about the house during the winter, do not wait until the ground is covered with snow, but begin in the Fall to scatter hayseed from the barn or stable floor, on the bare ground about the yard.

Millet or any bird seed will do as well. Hang some pieces of suet or beef-trimmings on the branches of the trees beyond the reach of cats and dogs. If at first these pieces are widely scattered at points radiating from the house as a center, your success should be assured. Your lures will keep best at this season if tied on the shade side of a tree trunk; but later in the winter they should be put on the sunny side. They should be well wound to limbs with twine, or covered with wire net-

ting, so that neither jays or crows can carry them off bodily.

They are now ready to attract and hold birds that might otherwise pass on to the south. The birds may not find the food at once, but usually they will find it sooner or later. When the chickadees have discovered it we are ready for the next move.

Fresh meat or suet is now put up on the trees nearest the house, to accustom the birds to coming there.

Many types of feeders can be made, varying the plain wood shelf, to the artistic food shelters of natural limbs and bark. Some feeders can be placed on movable pivots on poles with extended vanes in front so that the wind will always cause them to be in a sheltered position. This type of feeding shelf, Fig. 4, and others are shown on Plate 20.



Birdhouses Made at Rochester, N. Y.

The window shelf shown on Plate 20, Fig. 1, is convenient and can be easily watched and tended. Fig. 2 shows a feeding stick. Melted suet is poured into the holes and allowed to cool and the birds eat from the outside.

The cocoanut larder is inexpensive and easily set up. One end of a cocoanut is broken in as shown and the birds have access to the meat. Fig. 4 is one type of rustic feeder which has proven popular.

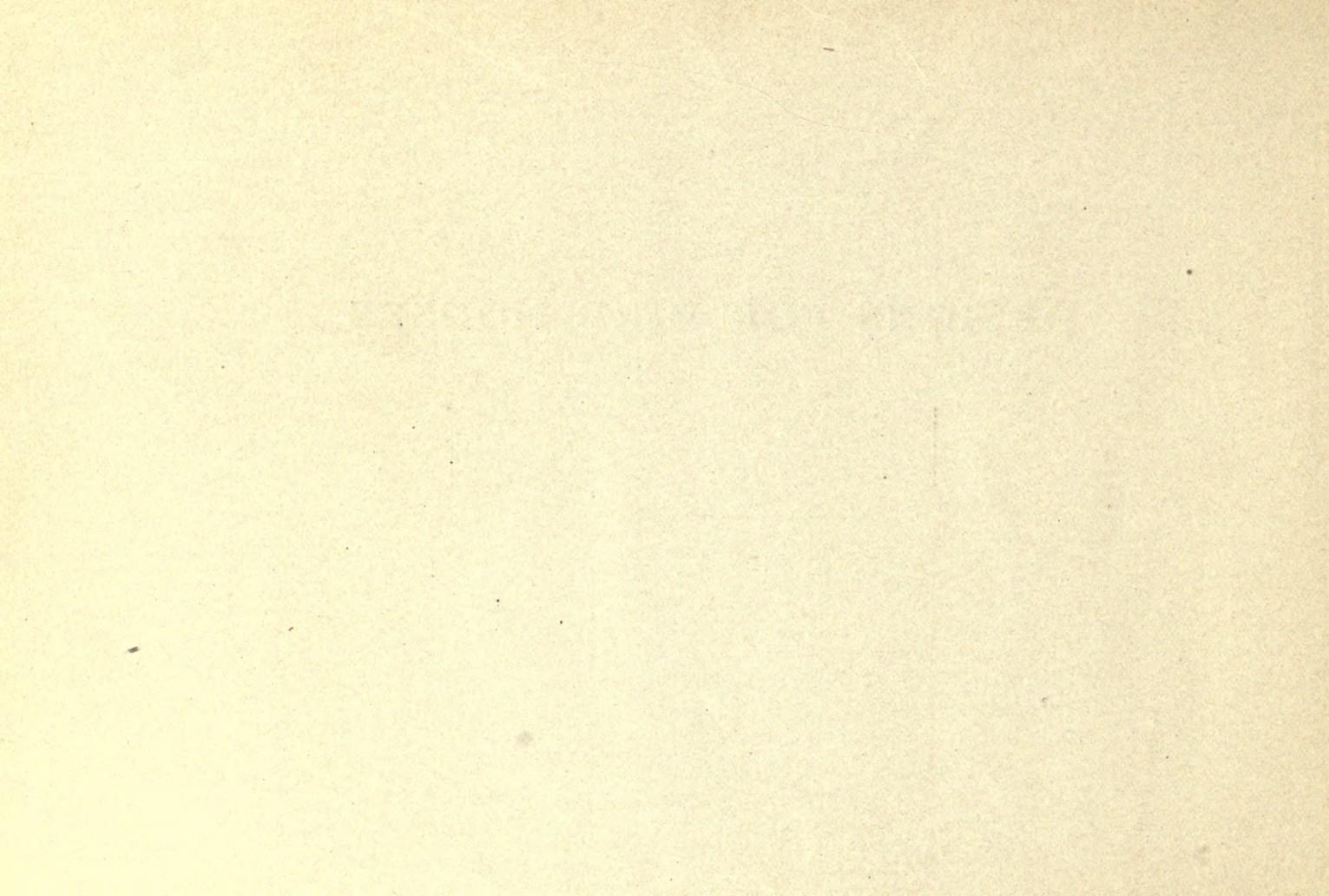
The following birds have been attracted about local feeders: Chickadees, Fig. 3, nut-hatches, woodpeckers, juncos, and even the wary jay, Fig. 13. Figure 14 shows a simple form of feeding shelf with sides of glass. A hairy woodpecker can be seen just below the upper box.

Corn, suet, scraps of meat, crumbs from the table, pieces of doughnut, nnts, sunflower seed, frozen milk and many other food materials may be utilized, if one wishes to experiment.

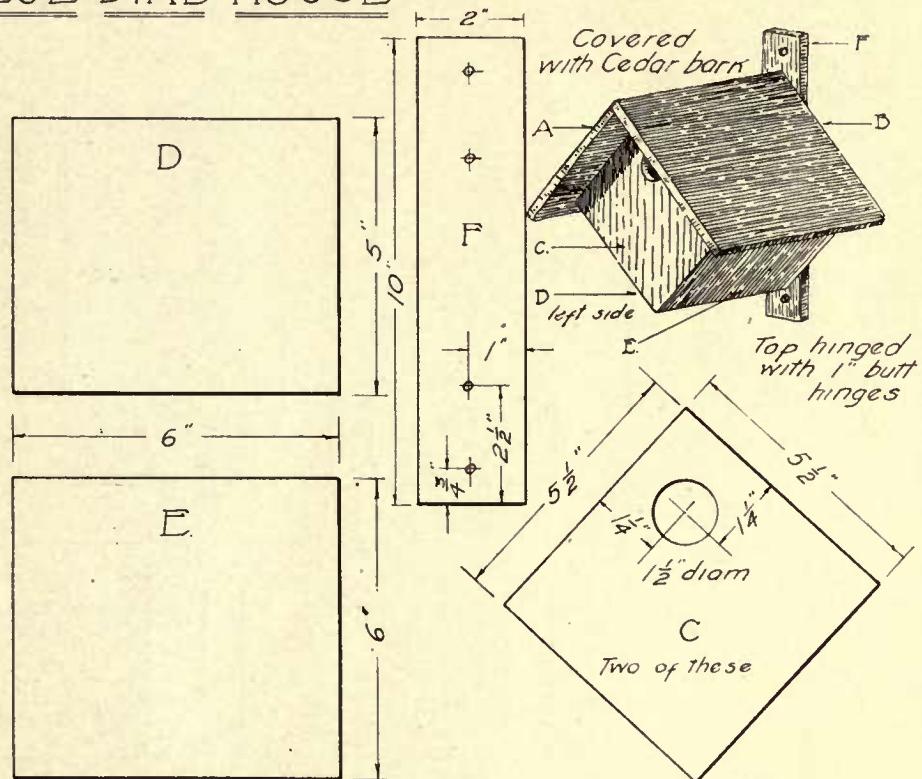
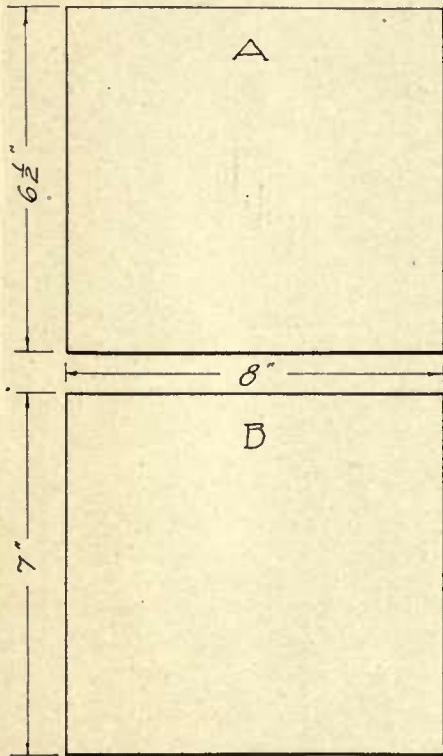
These methods of attracting and domesticating the birds will be found full of interest, and in some cases our efforts will be rewarded by having some little feathered ball jump fearlessly on our fingers for a choice titbit.

The birds will furnish instruction and amusement to the household throughout the year and a vast amount of good may be accomplished in this manner, adding greatly to the comfort and happiness of our wild bird friends.

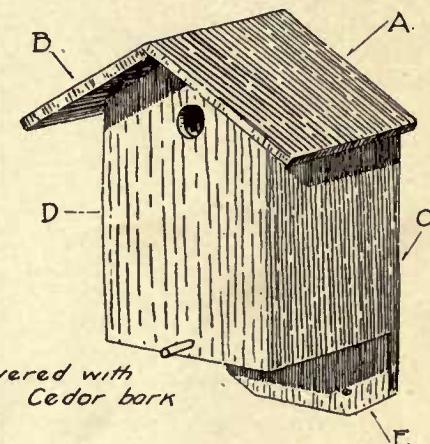
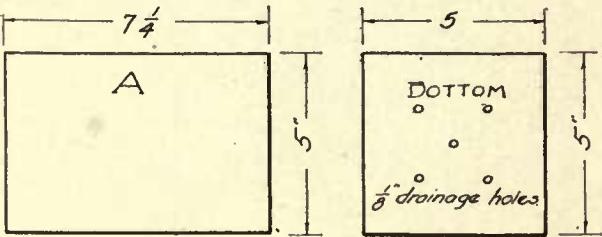
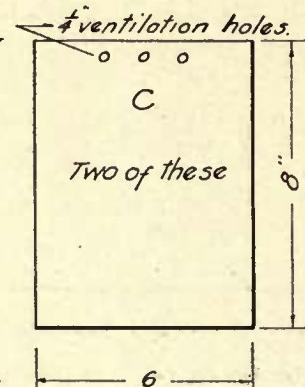
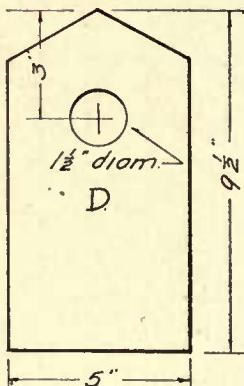
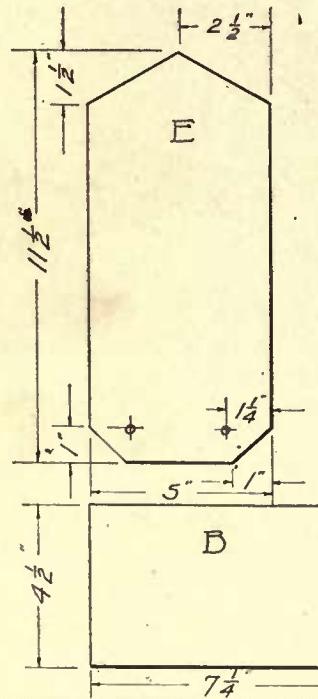
DESIGNS FOR BIRD HOUSES



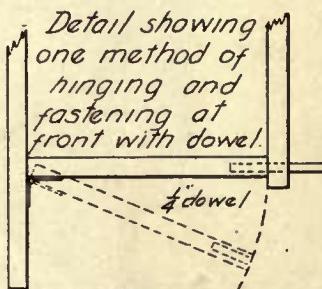
BLUE BIRD HOUSE

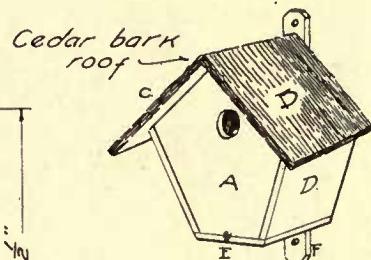
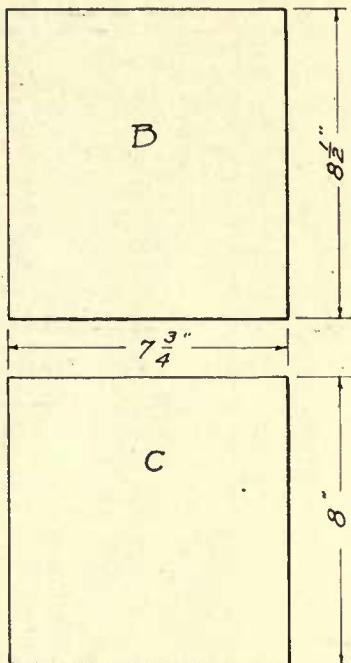
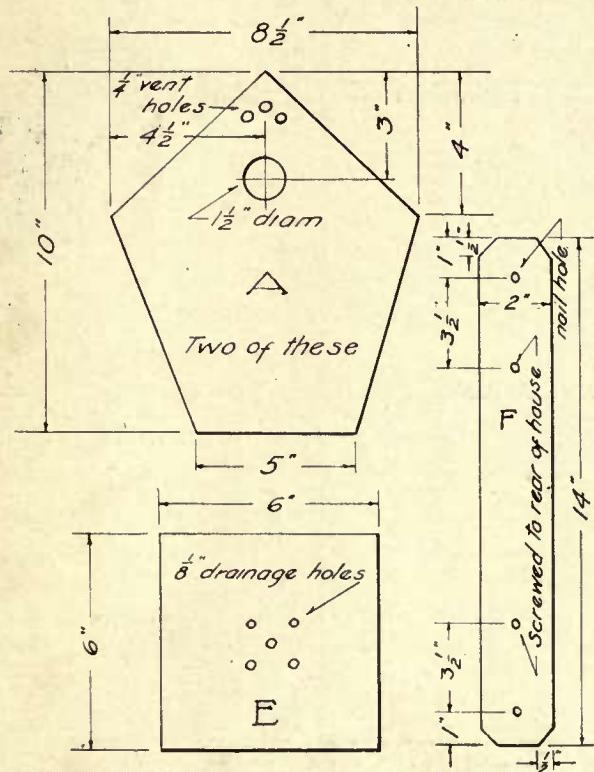


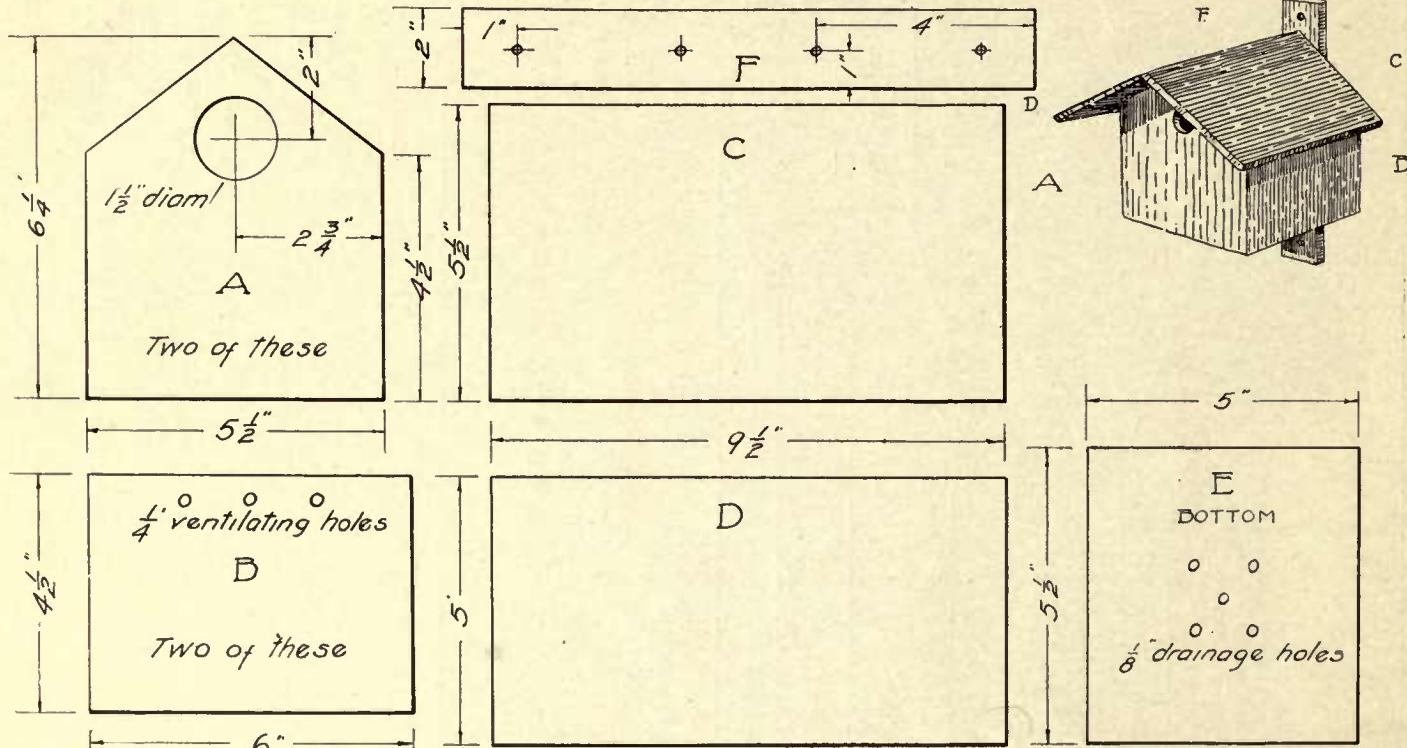
BLUE BIRD HOUSE.



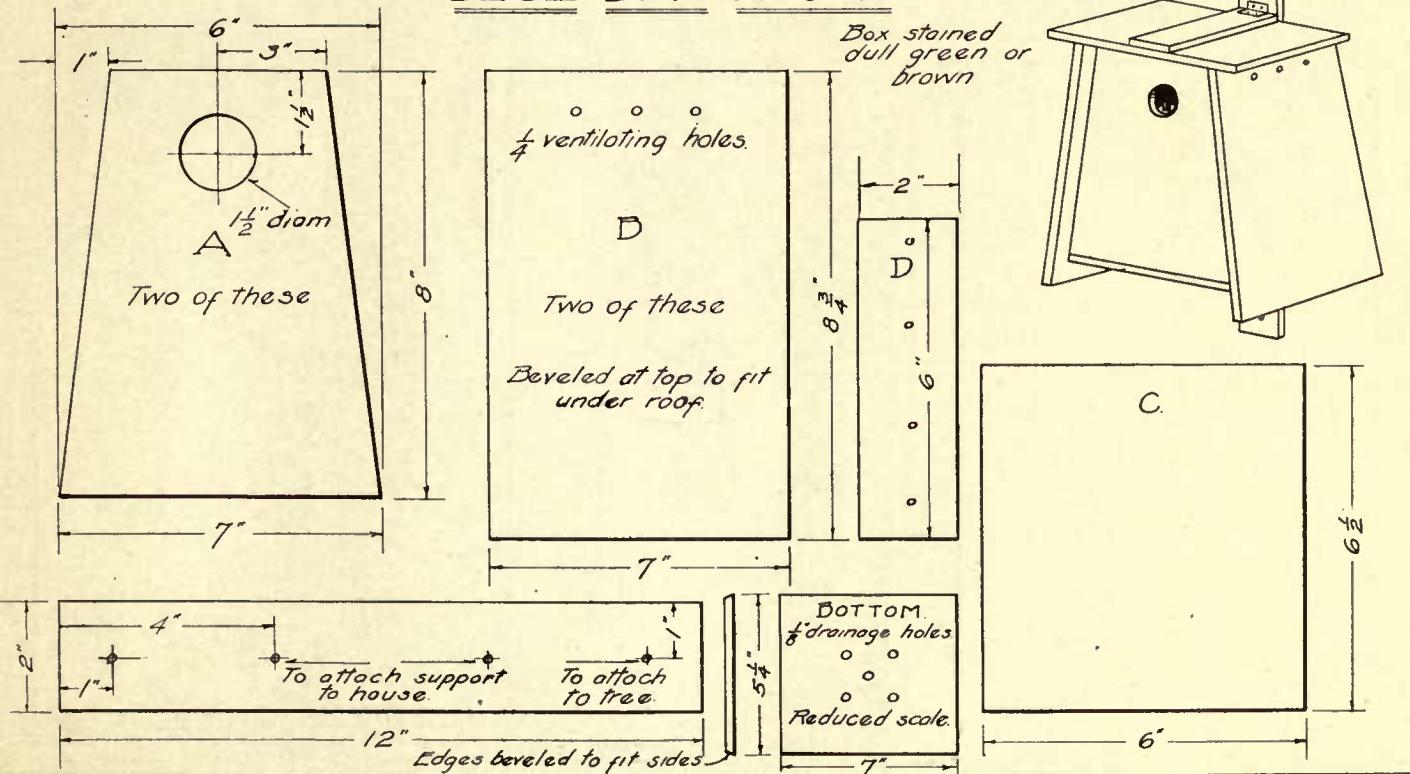
Covered with
Cedar bark



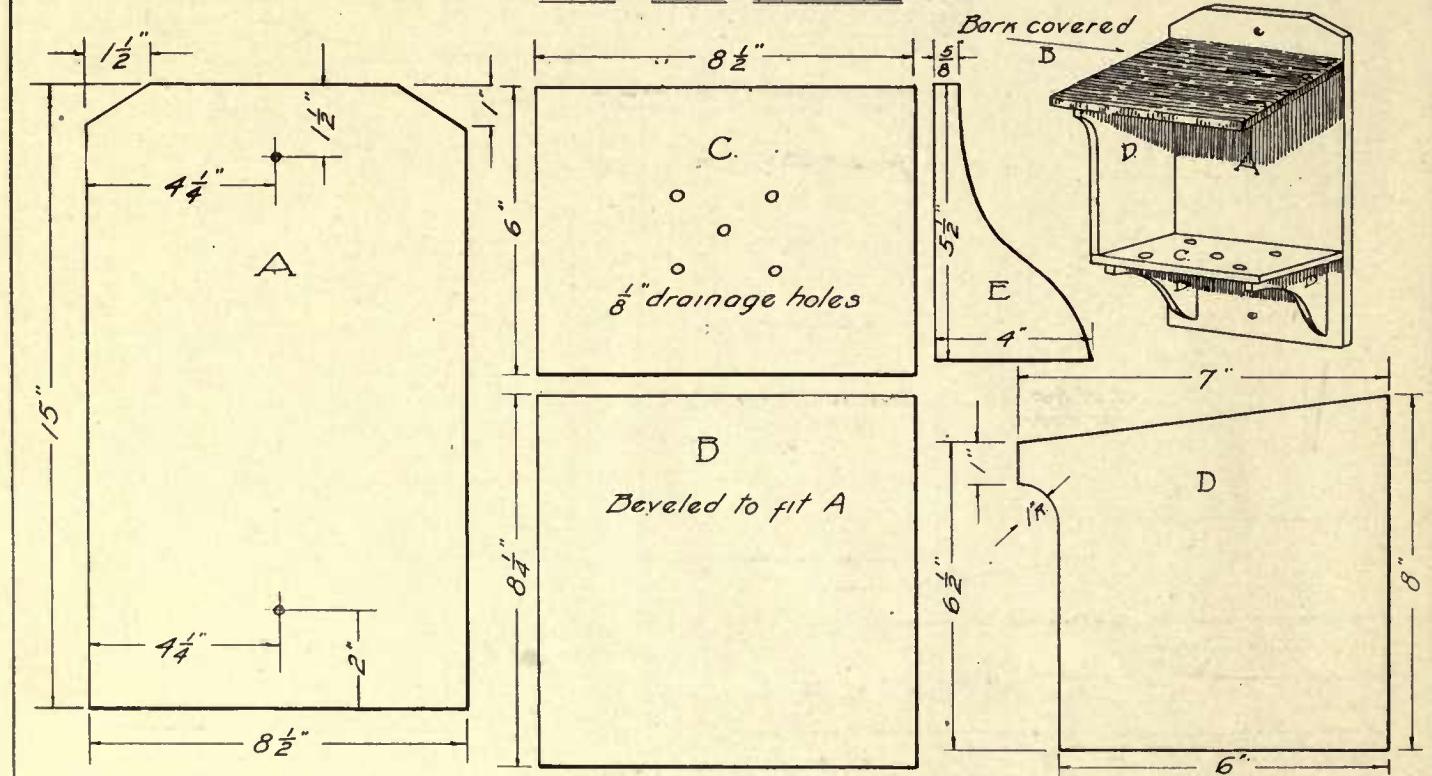
BLUE BIRD HOUSE

BLUE BIRD HOUSE

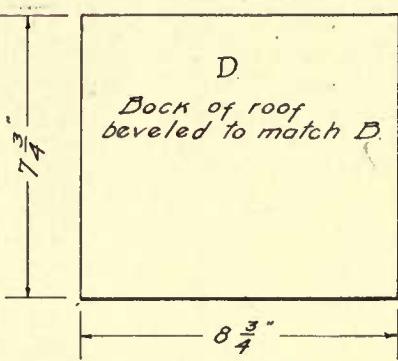
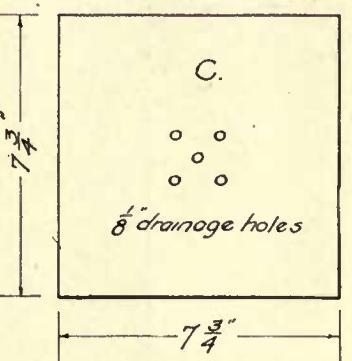
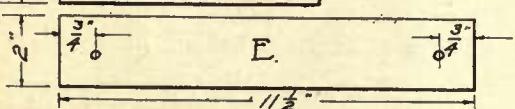
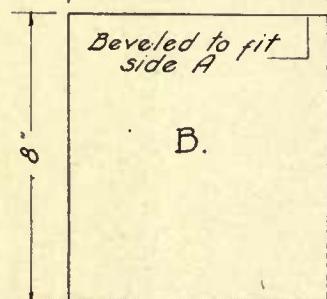
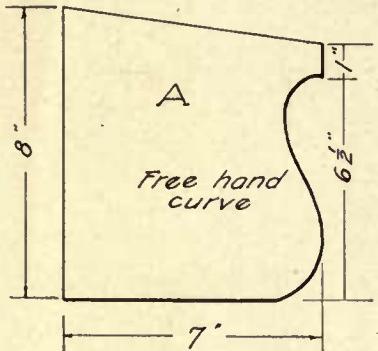
BLUE BIRD HOUSE



BOX FOR ROBINS.

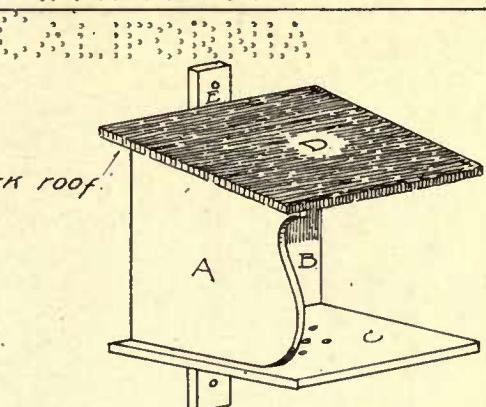


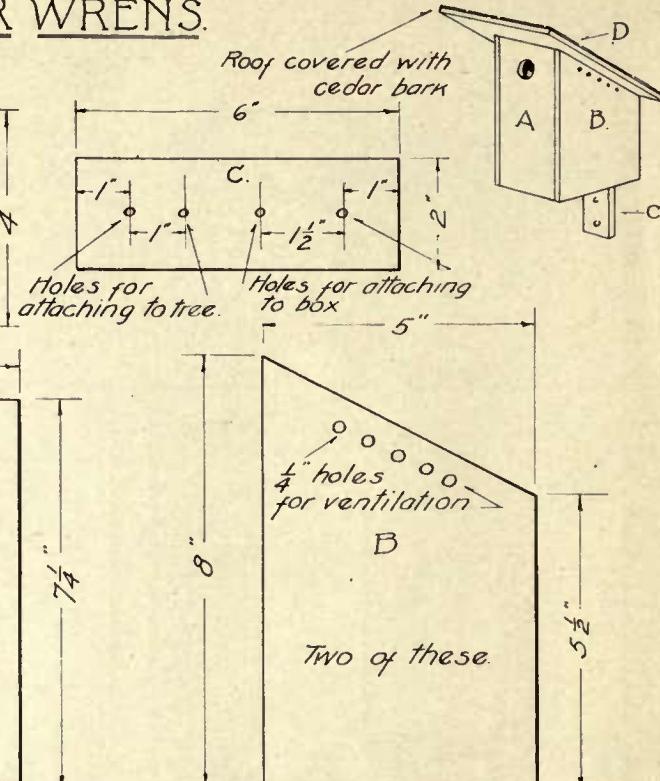
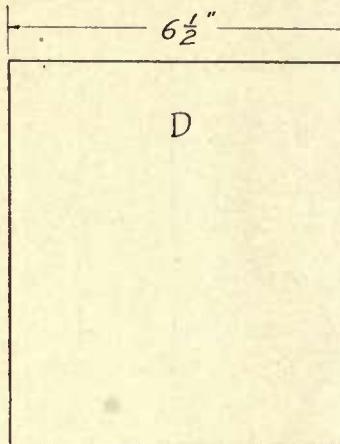
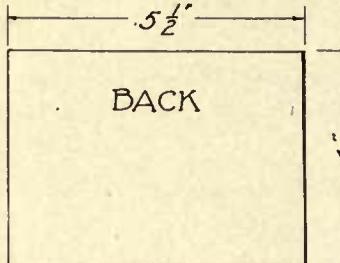
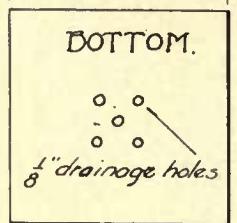
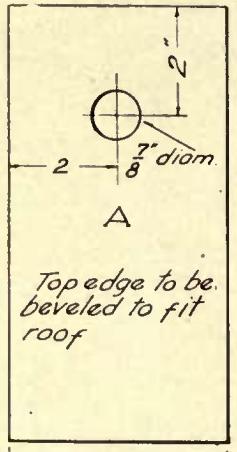
BOX FOR ROBINS.



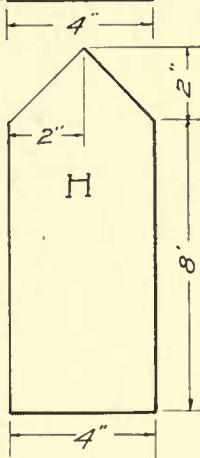
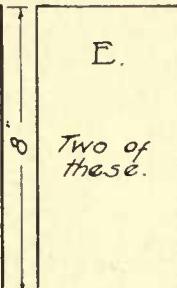
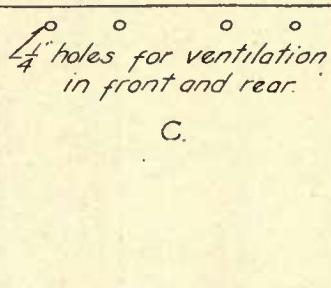
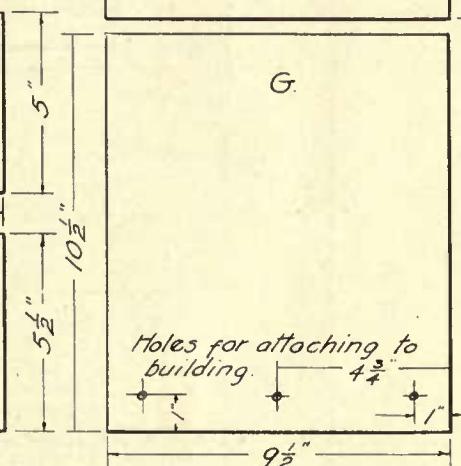
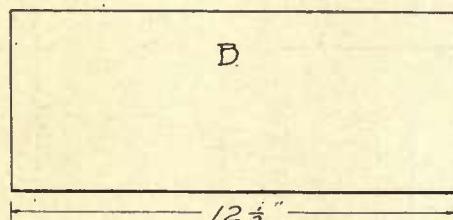
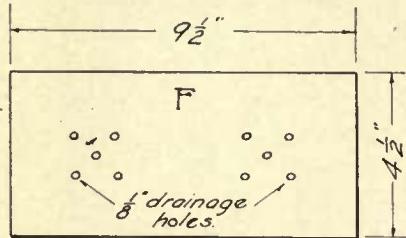
Cedar bark roof.

Robins require two sides open

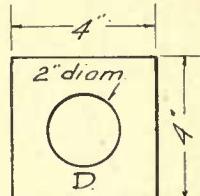


BOX FOR WRENS.

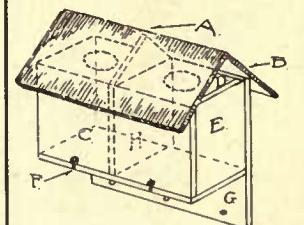
DOUBLE WREN HOUSE



The bottom is
hinged to back
by 1" butt hinges
and held in front
by small hooks.

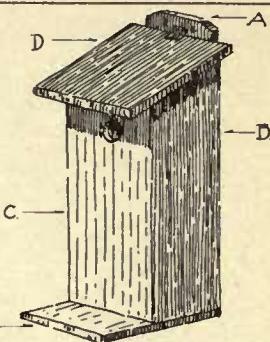
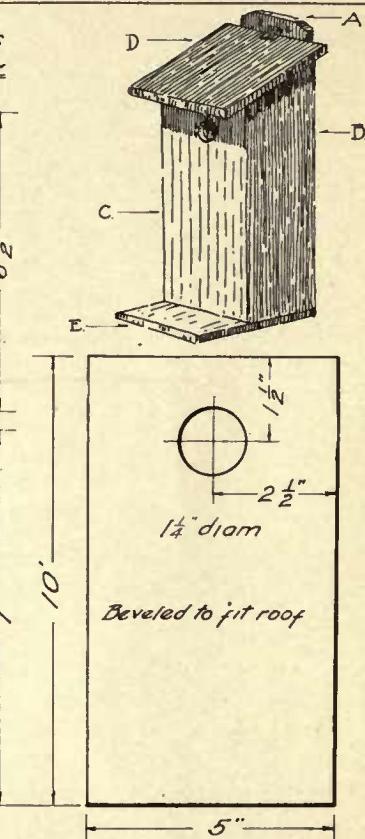
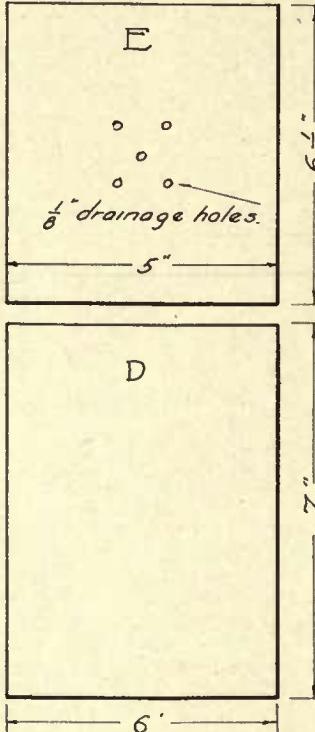
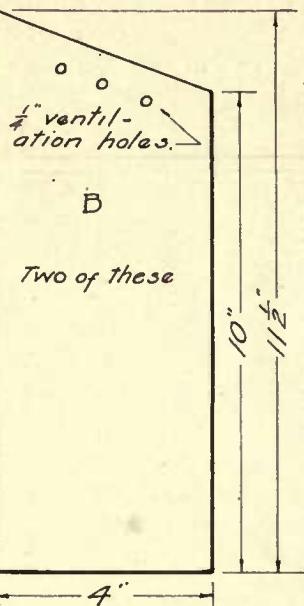
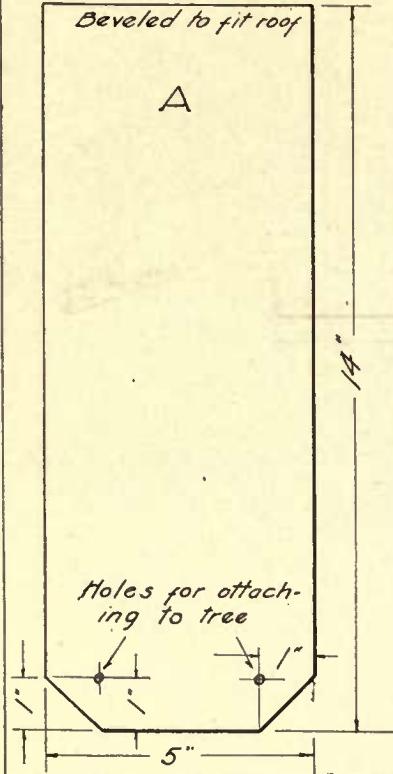


Two of these.

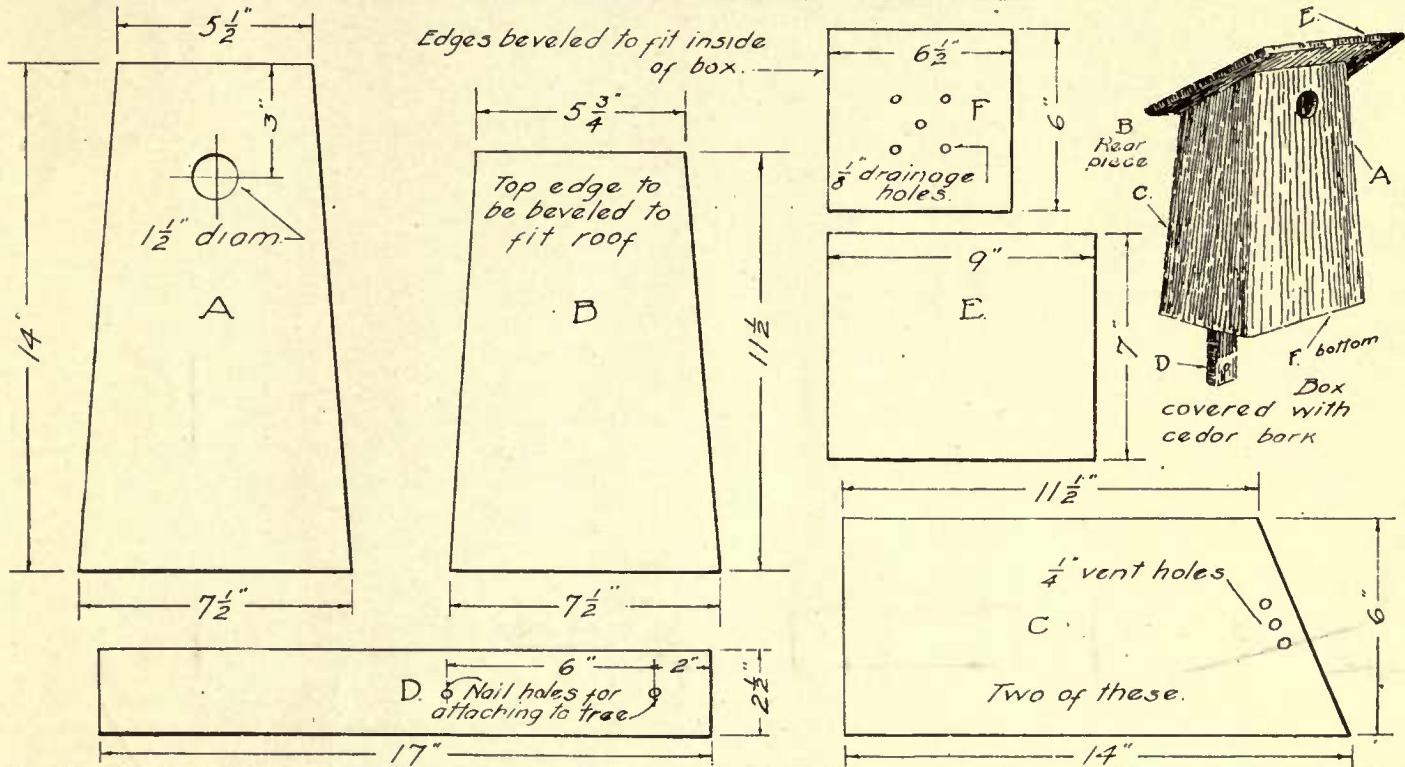


DOWNY WOODPECKER HOUSE*Beveled to fit roof*

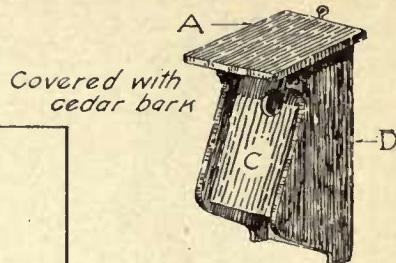
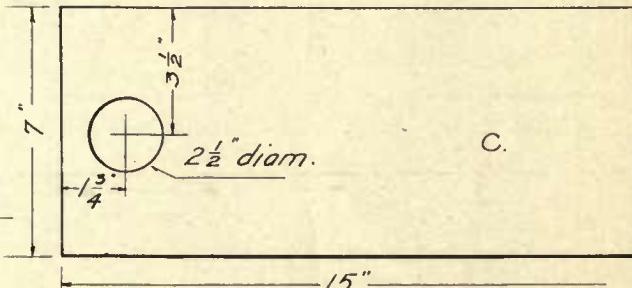
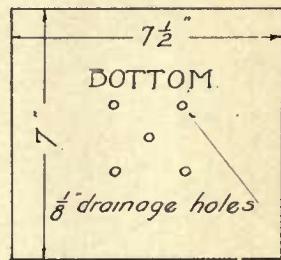
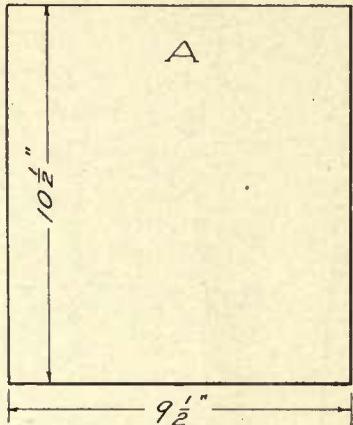
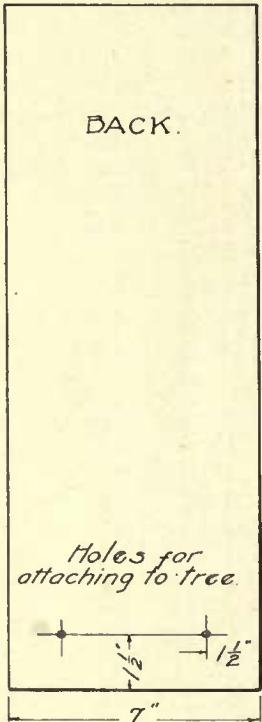
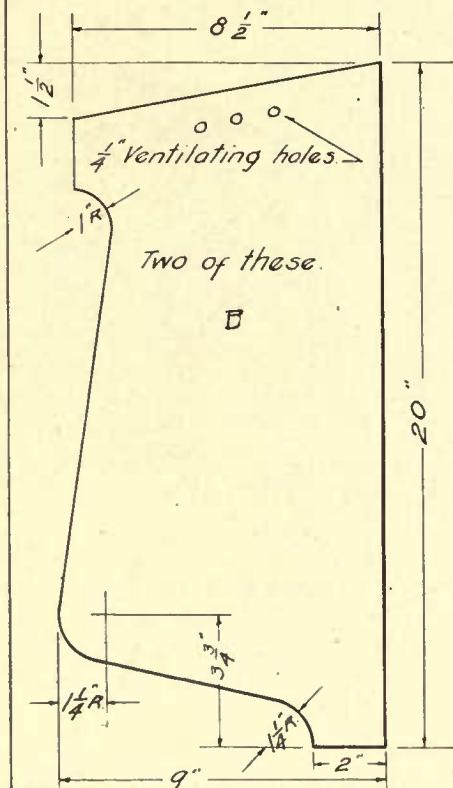
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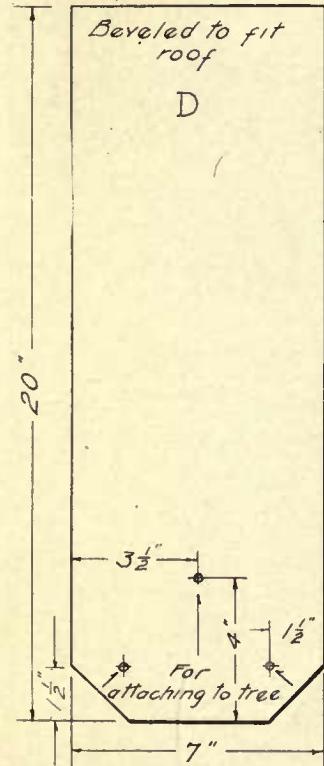
BOX FOR HAIRY WOODPECKERS.



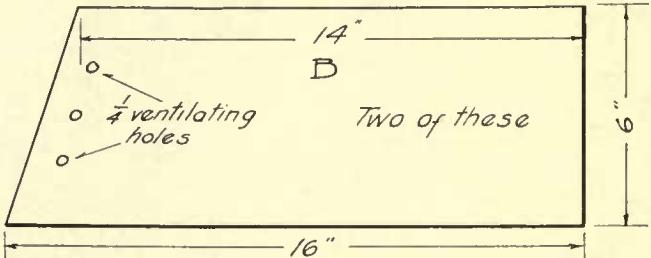
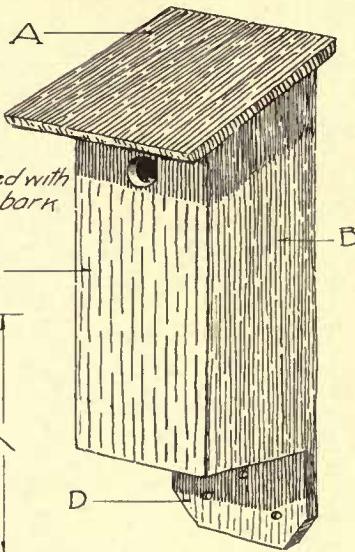
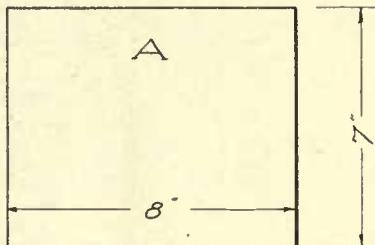
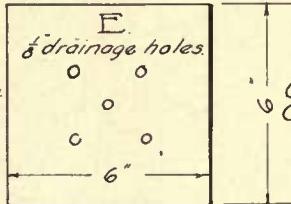
FLICKER HOUSE.

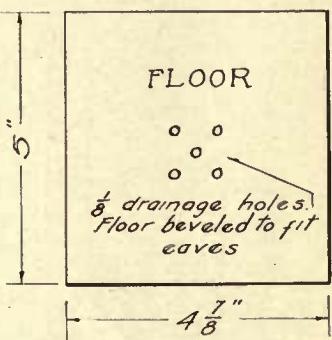
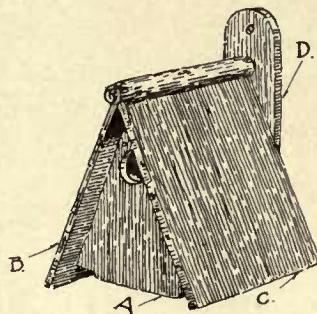
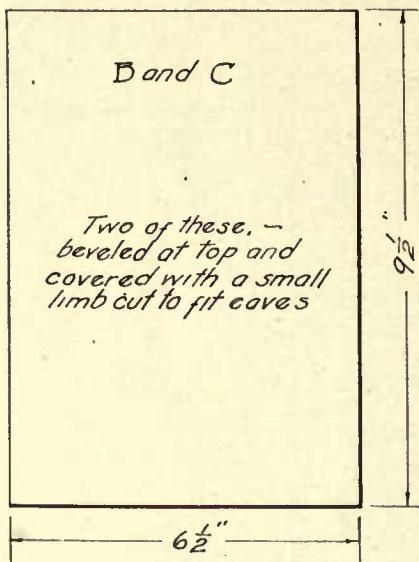
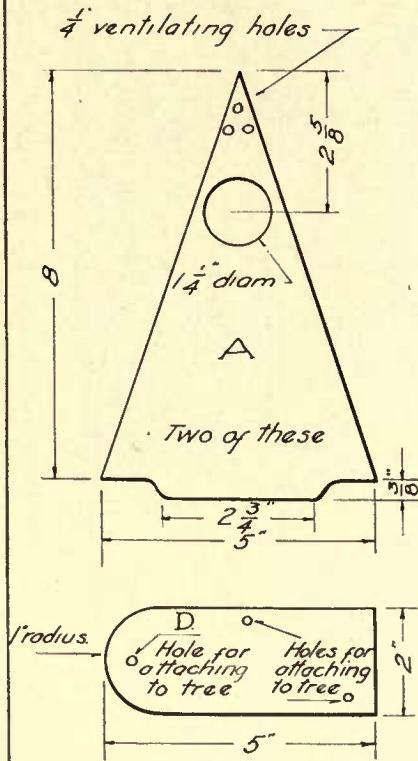


WOODPECKER HOUSE

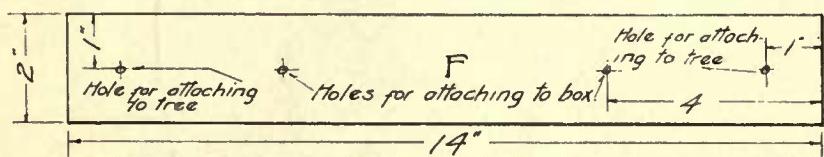
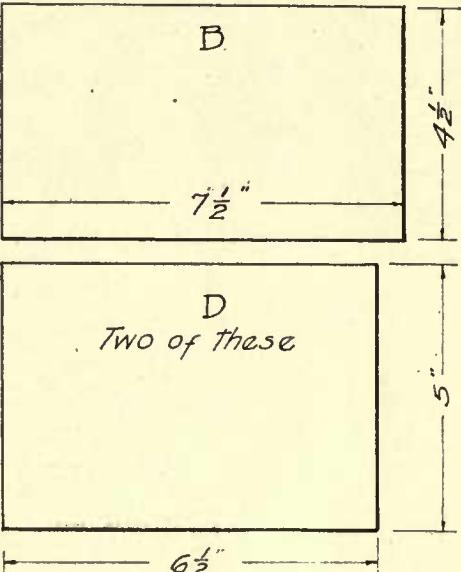
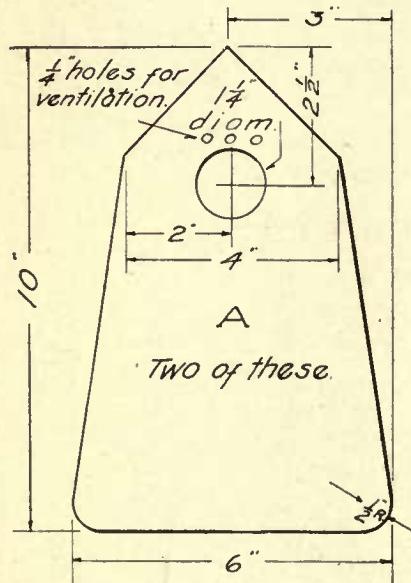


Bottom of box should be filled with about one inch of sawdust.

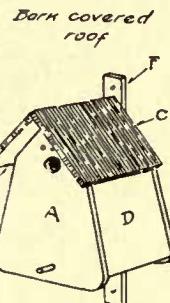
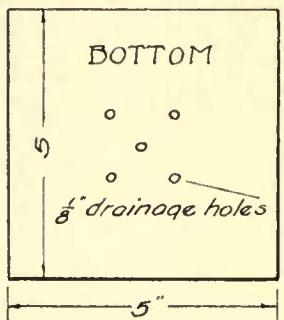


NUTHATCH HOUSE

NUTHATCH HOUSE

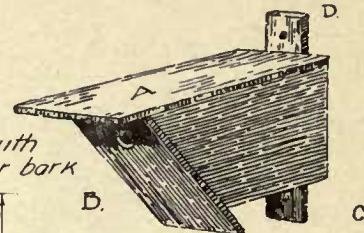
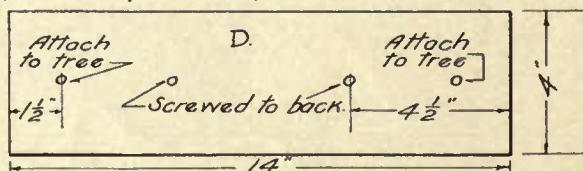
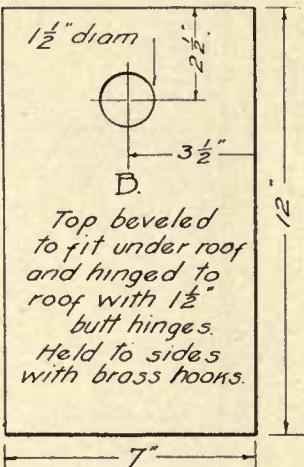
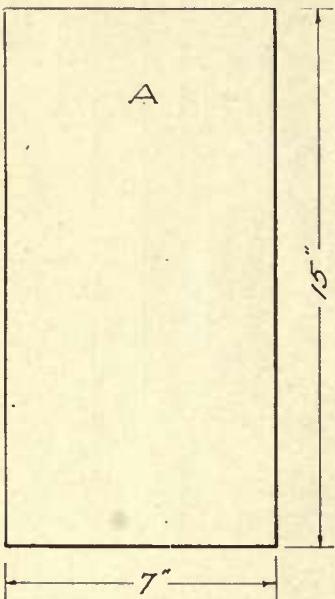
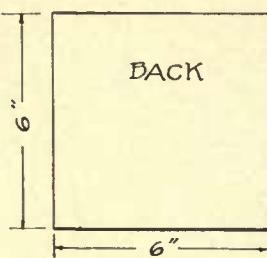
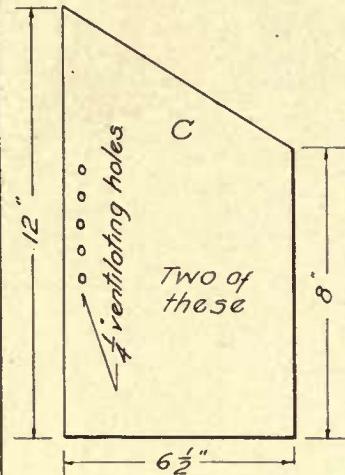


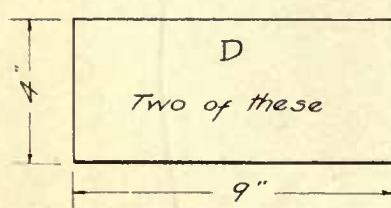
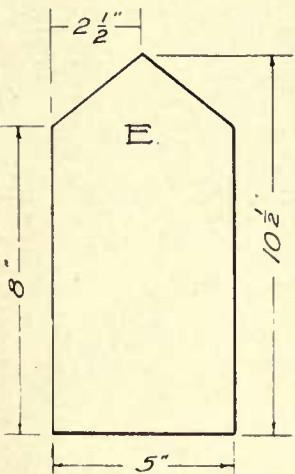
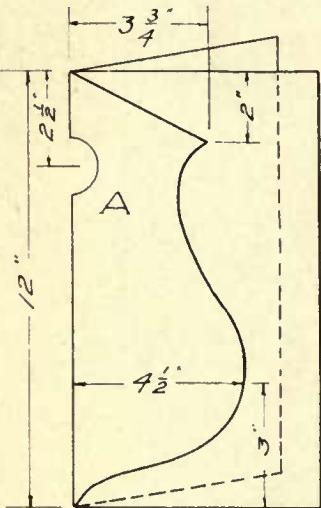
The bottom is hinged to back piece and held in front, as shown, by removable quarter inch dowel



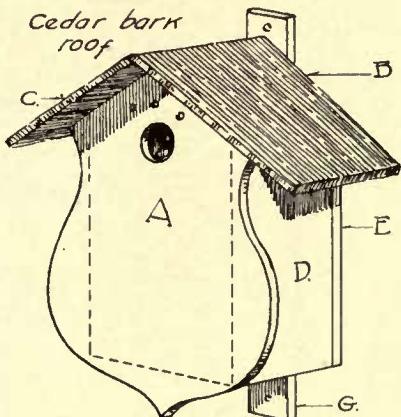
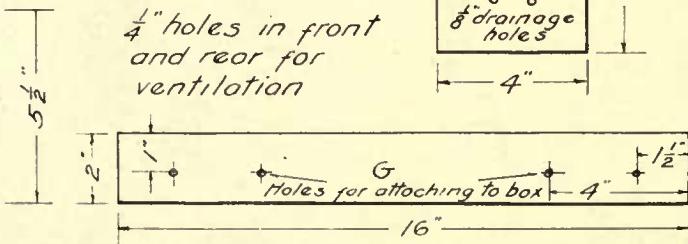
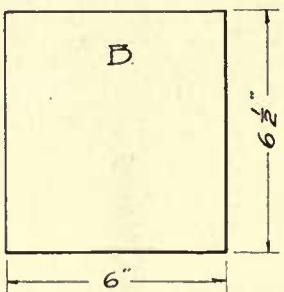
BOX FOR TREE SWALLOW

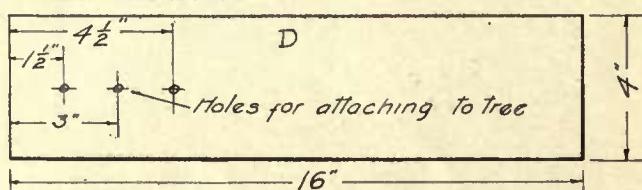
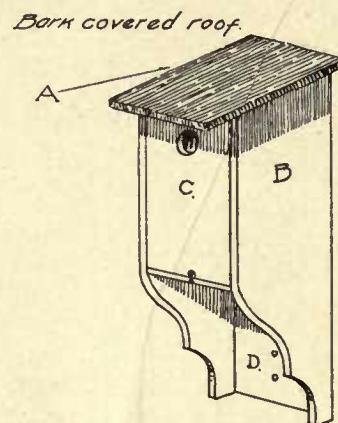
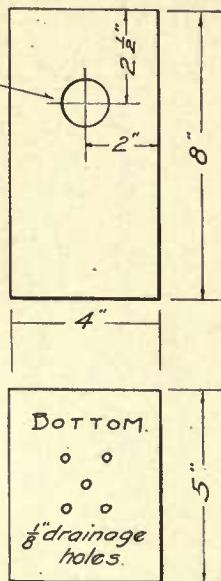
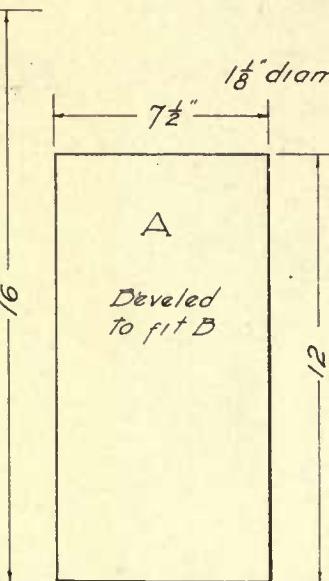
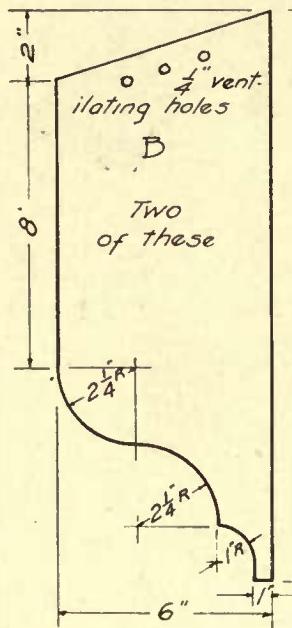
(CAT PROOF)



TITMOUSE HOUSE

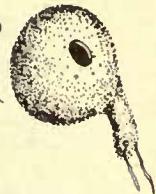
Sketch $\frac{1}{2}$ of the design on a folded piece of paper, as shown. Cut out, unfold, and use as pattern.



CHICKADEE HOUSE

Base hinged to back with 1" butt hinge and held in front by hook

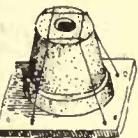
HOUSES FROM COMMON OBJECTS



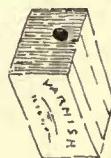
Milk can.



Tomato can.



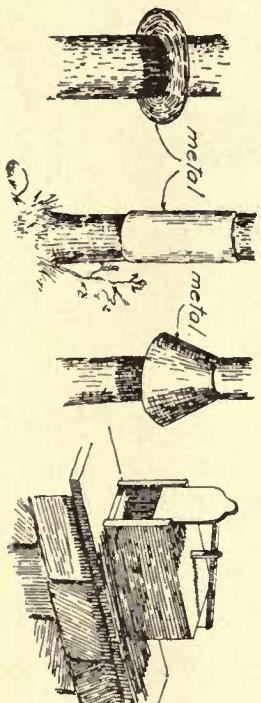
Flower pot.



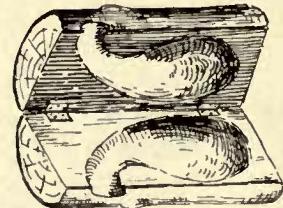
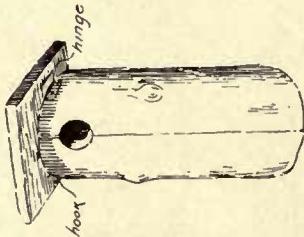
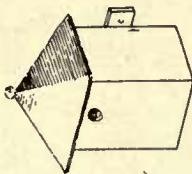
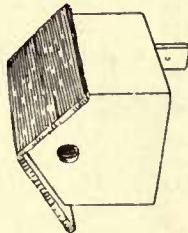
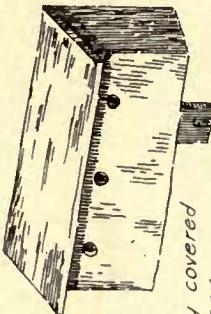
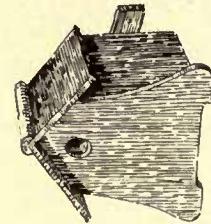
Small wooden box.

Any discarded article of suitable size may be utilized for a nesting box, those of wood being best. Metal objects should be placed in a cool shady place as they heat up very bodily if exposed to the sun.

Methods of keeping cats away.



SUGGESTED DESIGNS FOR BOXES

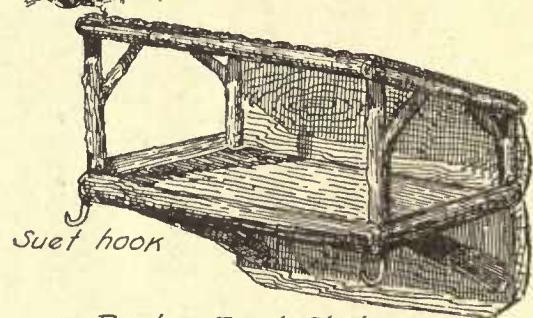
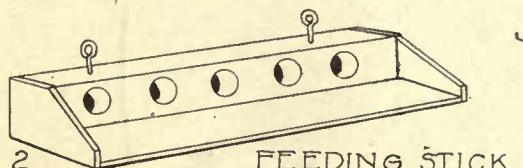
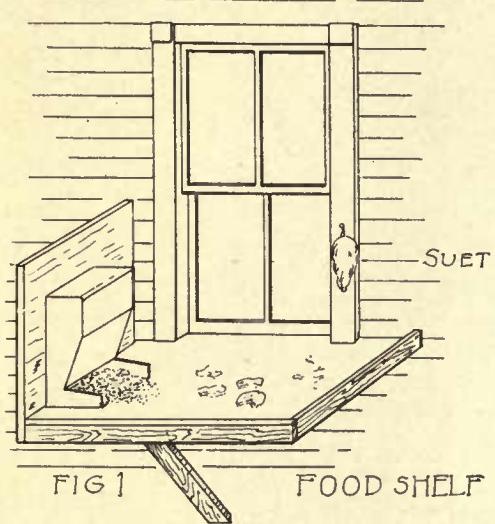


Natural limb
hollowed out

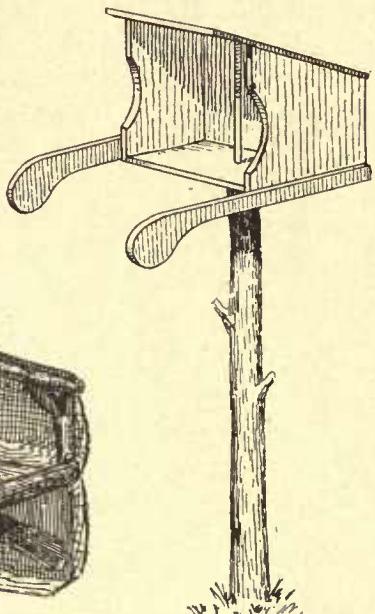
Cavity opened
showing method of
douging and hinging

FEEDING DEVICES

Drawings
made from
Farmers' Bulletin, 621



- Rustic Food Shelf -
To be attached to tree
or side of house.



10 JULY
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